



Daily Scheduling Scenario

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18 October 1995

Daily Scheduling Description

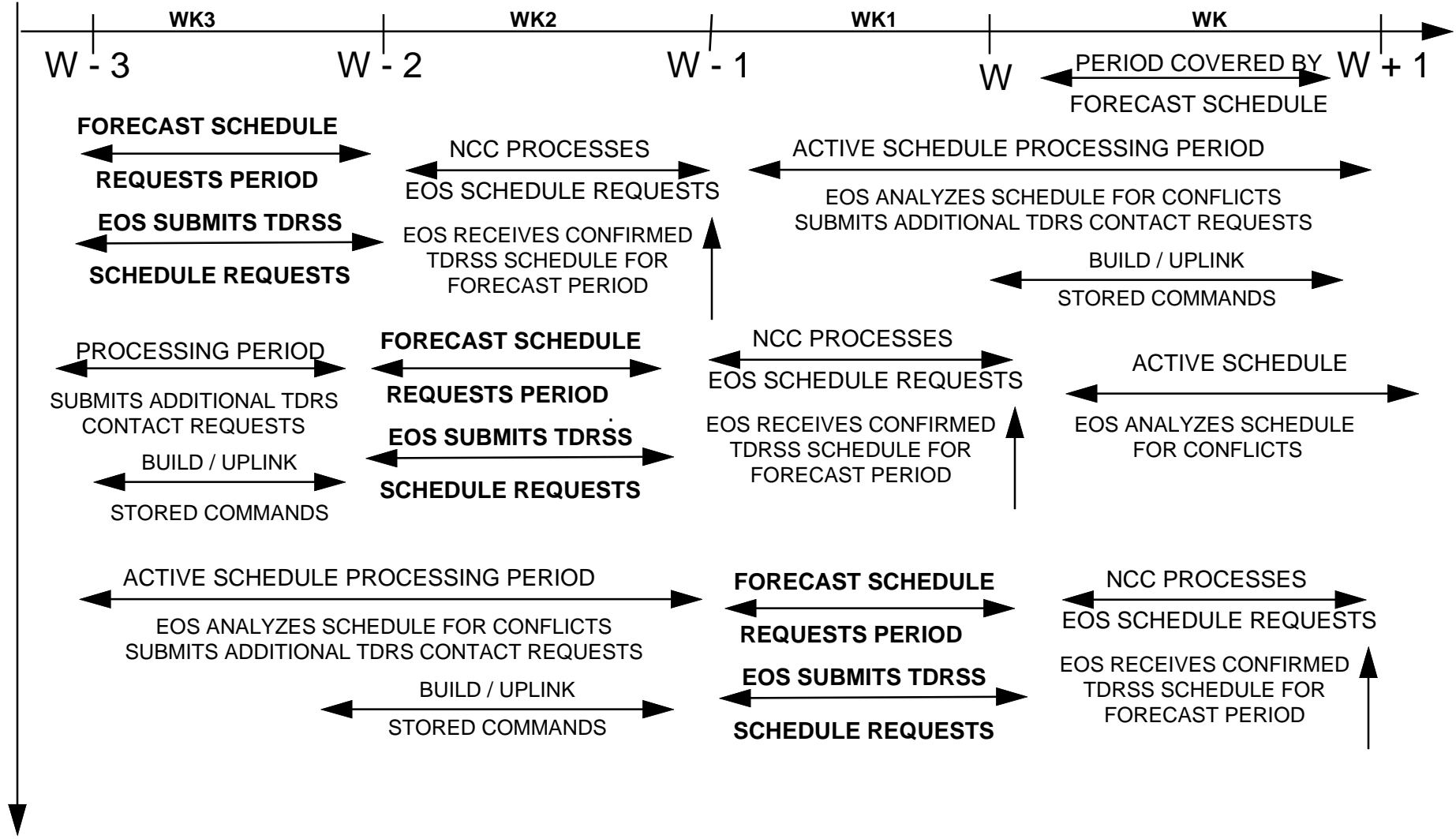
Description

- **The FOT Schedulers are responsible for:**
 - **Populating activities on the Timeline.**
 - **generating the Absolute Time Command Load(ATC) for AM-1.**
 - **generating the Ground Script for AM-1.**
 - **Scheduling the uplink of the ATC load and FDF loads.**
- **Activity definitions, Relative Time Command sequences, and Procedures used for scheduling are maintained under Operations CCB.**
- **The ATC Load and Ground Script are built from Activities and commands entered on the Timeline.**

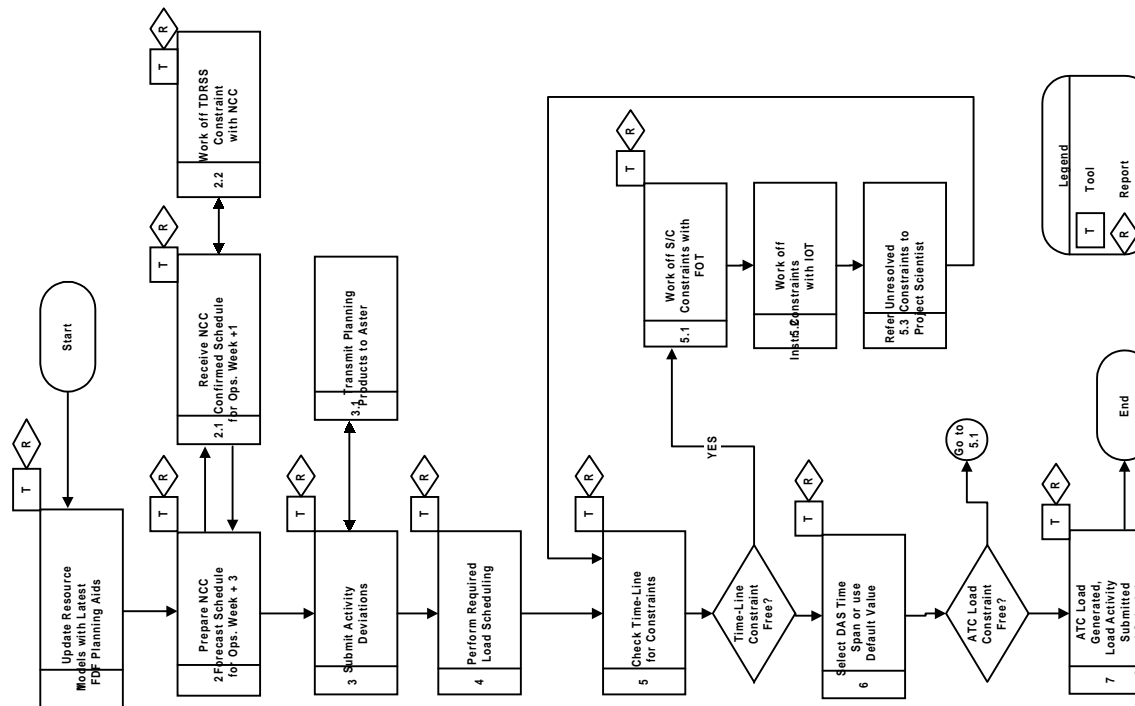
Daily Scheduling Scenario: Use / How Often

- **The Absolute Time Command Load controls the configuration of the S/C and selected Instruments in support of achieving the AM-1 science mission.**
- **The Ground Script is used by the FOT for the execution of real-time commanding.**
- **The ATC load and the Ground Script are generated simultaneously.**

NCC - EOS TDRSS Scheduling Windows



Daily Scheduling Scenario Flow Chart



Update Resource Models

Step 1

- DMS automatically receives FDF data and launches the *Event Scheduler* for validation and ingest.
- The *Resource Model* is updated with the FDF data.
- All events times are updated in the *Resource Model*.
- *Timeline* is updated to reflect updated event times.
- The Scheduler generates the Ephemeris report that specifies the time span of the FDF products ingested by the *Event Scheduler*.
 - The *Event Scheduler* runs as a batch process.

Prepare NCC Forecast Schedule

Step 2

- The FOT Scheduler uses the batch mode of the *Communication Contact Scheduler* tool to determine and schedule required TDRS contacts.
 - TDRS contact times are paired with Configuration Codes and Prototype IDs to form the Forecast Schedule
 - The Forecast Schedule is transmitted to the NCC.

Communications Contact Scheduler

The screenshot shows a software window titled "Communications Contact Scheduler". At the top left is a menu bar with "File" and "SAR". Below the menu bar, there is a "Resource ID" field containing "HGA" and a dropdown arrow. To the right of this are two diamond-shaped buttons labeled "Batch" and "SAR". Below these is a section labeled "Communication BAPs" containing a text box with the text "TDRS Baseline Activities". A horizontal line separates this from the "Plan Name" section. The "Plan Name" section has a text box containing "Master EOC plan", "What-if_1", and "What-if_2". To the right of the text box are four time input fields arranged in two rows: "Start Time" and "Stop Time", each with two input boxes. Another horizontal line is below the time fields. At the bottom of the window are three buttons: "SCHEDULE", "DISMISS", and "HELP".

Communications Contact Scheduler

File SAR

Resource ID HGA Batch SAR

Communication BAPs

TDRS Baseline Activities

Plan Name

Master EOC plan
What-if_1
What-if_2

Start Time
Stop Time

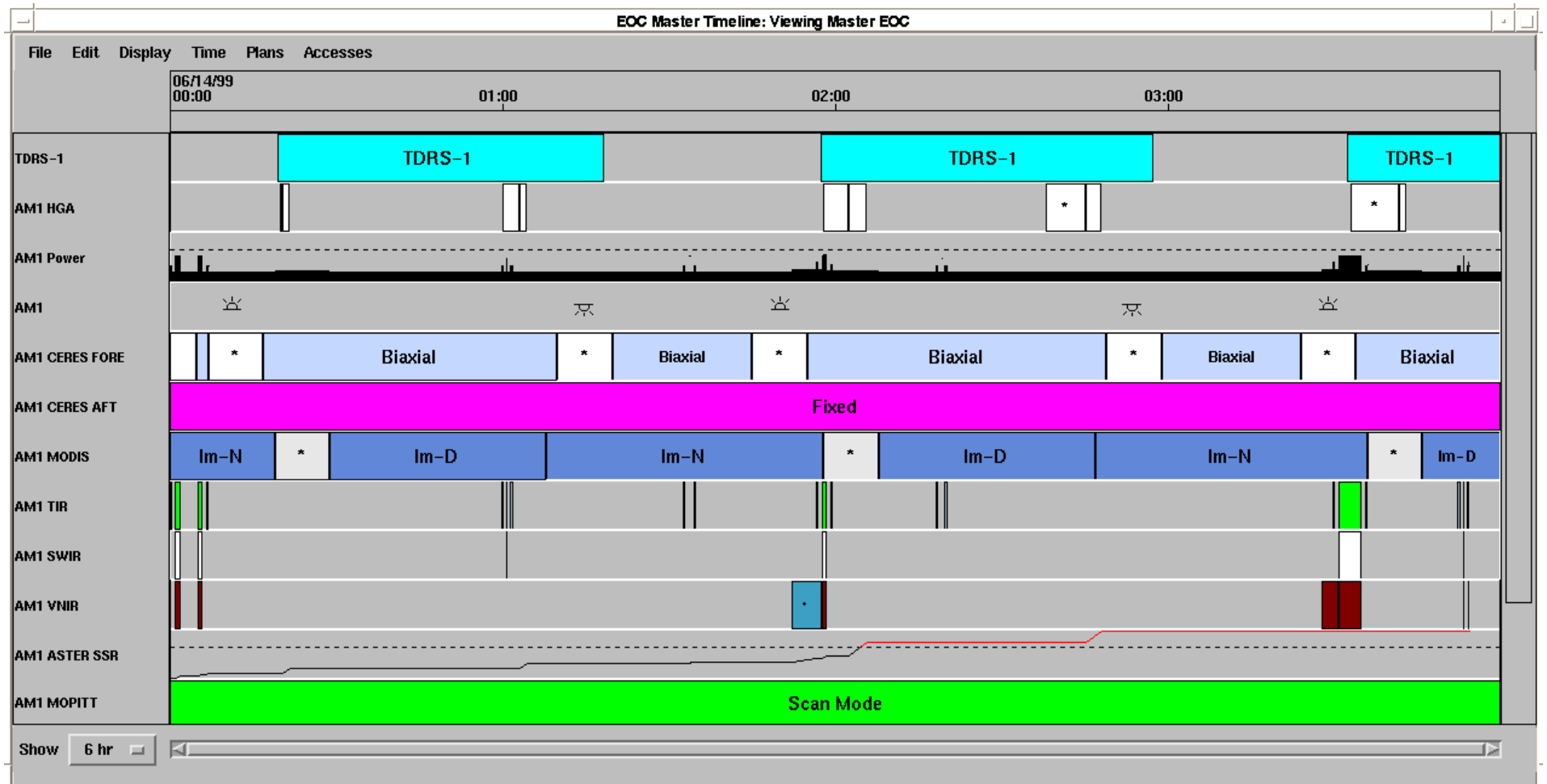
SCHEDULE DISMISS HELP

Receive NCC Confirmed Schedule

Step 2.1

- The *Communication Contact Scheduler* tool will receive route to the Timeline TDRS contacts from the NCC confirmed schedule.
 - Deficiencies in TDRS contacts resulting in SSR buffer overflows or insufficient TONS activity, are flagged as constraints.

Timeline Tool



NCC Constraint Workoff

Step 2.3

- The FOT Scheduler uses the *Communication Contact Scheduler* tool to schedule additional required TDRS contacts
 - FOT Scheduler executes extensive voice negotiations with the NCC to identify viable TDRS contact times.
 - Additional TDRS contact times form a Schedule Add Request
 - The Schedule Add Request is transmitted to the NCC

Communications Contact Scheduler

File SAR

Resource ID HGA Batch SAR

Prototype IDs

A01	MA Forward Service	NCC
A02	SSA Forward Service	NCC
A03	KSA Forward Service 2	User
B01	MA Return Service	NCC
B02	SSA Return Service	NCC
B03	KSA Return Service	NCC

Plans

Master Plan
What-if_1
What-if_2

Event Start Time 1999/12/3 12:00:00

Event Stop Time 1999/12/3 12:11:00

Start Time Tolerance (Plus) 00:03 mm:ss

Start Time Tolerance (minus) 00:01 mm:ss

TDRS Id TDRS-E

Support Flag Normal Premium

OK SCHEDULE CANCEL HELP

Activity Deviation Scheduling

Step 3

- The FOT Scheduler uses the *Activity Scheduler* tool to Add, Delete, and Change Timeline activities
- Inside the Activity Display Window, a Scheduler will:
 - Select a resource and the desired activity
 - The timetag for the activity as either an absolute time or an event
 - The a time span, if applicable, is specified for the activity
 - The Scheduler sends the activity to the *Timeline*
 - The Scheduler uses the *Timeline* print option to print a graphical image of the *Timeline* display

Activity Scheduler Display

The screenshot shows a software window titled "Scheduler" with a menu bar containing "File", "Edit", "View", and "Help". Below the menu bar, there are three radio buttons: "Resource" (selected), "BAPs", "Activities", and "Commands". The "Resource" button is currently selected, and its value "AM1 MODIS" is displayed in a text box. Below this, there are two sections: "Activities" and "Plans". The "Activities" section contains a list box with "Modis Collection" and "Modis Calibration". The "Plans" section contains a list box with "Master EOC" and "what if". Below these sections, there are two main scheduling sections. The first section is "Schedule Start Time By:" with two radio buttons: "Event" (selected) and "Absolute Time". Under "Event", there is a "Sunrise" button, a "+" button, a "-" button, and a text box. Under "Absolute Time", there is a text box and a "mm:ss" button. The second section is "Schedule Stop Time By:" with three radio buttons: "Event" (selected), "Absolute Time", and "Duration". Under "Event", there is a text box. Under "Absolute Time", there is a text box. Under "Duration", there is a text box and a "mm:ss" button. At the bottom, there is a "schedule" button.

Scheduler

File Edit View Help

Resource AM1 MODIS BAPs Activities Commands

Activities

Modis Collection
Modis Calibration

Plans

Master EOC
what if

Schedule Start Time By: Event Absolute Time

Sunrise + - mm:ss

Event Time

Schedule Stop Time By: Event Absolute Time Duration

Stop Time mm:ss

schedule

Load Scheduling

Step 4

The FOT Scheduler uses the *Load Scheduler* tool for the scheduling of AM-1 S/C and Instrument loads .

- The Scheduler performs the following via the *Load Scheduler* Display:
 - Selects desired load, a related uplink activity, a load window start time by absolute time or orbit event, and a duration for the load window.
 - Sends the load and uplink activity to the *Timeline*.
 - Generates a report of the schedule loads.

Load Scheduler Display

The screenshot shows a window titled "Load Scheduler" with a menu bar containing "File", "View", and "Help". The main area displays the following information:

Load Name: MPR_AM1_MISR_99Jun07_99Jun23

Resource: AM1 Load **Load Type:** Microprocessor

Activity: MISR Uplink Act **Destination:** MISR

Nominal Uplink Time: 1.2 sec **Size:** 20 kbit

Valid Uplink Period: 1999 Jun 07 12:00:00 - 1999 Jun 23 12:00:00

Plans

Master EOC
what if

Uplink Window Start:

 ☐ Orbital Event ☐ Absolute Time

Event Time

Uplink Window End: ☐ Orbital Event ☐ Absolute Time ☐ Duration

Stop Time

Check Constraints

Step 5

- ***Timeline*** tool shows constraints on and/or between activities.
- ***Timeline*** edit options allows for direct manipulation of constrained activities on the Timeline.
- ***Timeline*** view available to users of the EOC scheduling system, including the FOT, ISTs, and ICCs.
- FOT executes constraint resolution procedures for bus activities and communications contacts, in cooperation with the Off-Line engineering staff.
- Instrument Teams are expected to execute intra-instrument constraint resolution procedures.
- Unresolved constraints will be referred to the Mission Operations Manager or designate for resolution.
- Reports of the ***Timeline*** contents and constraints may be printed.

Detailed Activity Schedule

Step 6

- FOT Scheduler uses the *ATC Load Generator* tool to generate ATC loads for a user specified time span.
 - Inside the *ATC Load Generator* window, the Scheduler enters the DAS stop time.
- The DAS is prepared and submitted to the CMS for expansion into commands and the subsequent ATC load.

ATC Load Generator Display

ATC Load Generator

File Jobs Help

◇ DAS/ATC Load

◇ Late Change

◇ Constraint Check

◇ Simulation

Plans

Master Plan

DAS Times :

Start Time 3/7/1999 00:00:00

Stop Time 03/08/1999 00:00:00

Uplink Request :

Start Time 03/07/1999 10:00:00

Stop Time 03/07/1999 16:00:00

Jobs Information :

Job #	Type	Time Interval	Status
Current	Late Change	3/5/99 00:00:00 – 3/6/99 00:00:00	15:32:00 Generating DAS
1	Late Change	3/6/99 00:00:00 – 3/7/99 00:00:00	Waiting in queue
2	Simulation	3/9/99 15:30:00 – 3/9/99 17:30:00	Waiting in queue

ATC Load and Ground Script

Step 7

- All ATC commands are constraint checked.
- The ATC binary load file is generated.
- An ATC load uplink activity is entered into the Ground Script.
- On-line staff is notified of the new ATC load availability and the updated Ground Script.